



SEQUENCE LISTING

<110> Altmann, Scott W

Wang, Luquan

Graziano, Michael

Murgolo, Nick

<120> NPC1L1 (NPC3) AND METHODS OF USE THEREOF

<130> JB01603-K-US

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<151> 2002-07-19

<160> 50

<170> PatentIn version 3.1

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<212> DNA

<213> Rattus sp.

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48

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Ala Ala Gln Gly Glu Leu Tyr Thr Pro Lys His Glu Ala Gly Val Cys

96

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Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu	
35 40 45	
acg tca cta tcc aat gta tcc tgc ctg tct aac acc ccg gcc cgc cac	192
Thr Ser Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg His	
50 55 60	
gtc acg ggt gaa cac ctg gct ctt ctc cag cgc atc tgt ccc cgc ctg	240
Val Thr Gly Glu His Leu Ala Leu Leu Gln Arg Ile Cys Pro Arg Leu	
65 70 75 80	
tac aac ggc ccc aat acc act ttt gcc tgt tgc tct acc aag cag ctg	288
Tyr Asn Gly Pro Asn Thr Thr Phe Ala Cys Cys Ser Thr Lys Gln Leu	
85 90 95	
ctg tcc tta gaa agc agc atg tcc atc acc aag gcc ctt ctc acg cgc	336
Leu Ser Leu Glu Ser Ser Met Ser Ile Thr Lys Ala Leu Leu Thr Arg	
100 105 110	
tgc ccg gcc tgc tct gac aat ttt gtg agc tta cac tgc cac aac act	384
Cys Pro Ala Cys Ser Asp Asn Phe Val Ser Leu His Cys His Asn Thr	
115 120 125	
tgc agc cct gac cag agc ctc ttc atc aac gtc acc cgg gtg gtt gag	432
Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Glu	
130 135 140	
cgg ggc gct gga gag cct cct gcc gtg gtg gcc tat gag gcc ttt tat	480
Arg Gly Ala Gly Glu Pro Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr	
145 150 155 160	
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Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Gln Val Arg	
165 170 175	
atc cct gcg gcc gct tcc ttg gcc gtg ggc agc atg tgt gga gtg tat	576
Ile Pro Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr	
180 185 190	
ggc tcc gcc ctc tgc aat gct cag cgc tgg ctc aac ttc caa gga gac	624
Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp	
195 200 205	
aca ggg aat ggc ctg gct ccg ctg gat atc acc ttc cac ctc ttg gag	672
Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu	
210 215 220	
cct ggc cag gcc cta ccg gat ggg atc cag cca ctg aat ggg aag atc	720
Pro Gly Gln Ala Leu Pro Asp Gly Ile Gln Pro Leu Asn Gly Lys Ile	
225 230 235 240	
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Ala Pro Cys Asn Glu Ser Gln Gly Asp Asp Ser Ala Val Cys Ser Cys	
245 250 255	
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Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Glu Ala Leu	
260 265 270	

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Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile		
275 280 285		
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Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Ala Val Leu Val Arg		
290 295 300		
ctc cga gtg gtt tcc aac agg aac aac aag gca gaa ggc ccc cag		960
Leu Arg Val Val Ser Asn Arg Asn Lys Asn Lys Ala Glu Gly Pro Gln		
305 310 315 320		
gaa gcc ccc aaa ctc cct cat aag cac aaa ctc tca ccc cat acc atc		1008
Glu Ala Pro Lys Leu Pro His Lys His Lys Leu Ser Pro His Thr Ile		
325 330 335		
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Leu Gly Arg Phe Phe Gln Asn Trp Gly Thr Arg Val Ala Ser Trp Pro		
340 345 350		
ctc acc gtc tta gca ctg tcc ttc atc gtt gtg ata gcc tta gca gca		1104
Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ala Ala		
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Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser		
370 375 380		
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Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ser Phe His Asp Glu His		
385 390 395 400		
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Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Arg Asn		
405 410 415		
agg tcc agc tac aag tac gac tcc cta ctg cta ggg tcc aag aac ttc		1296
Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Ser Lys Asn Phe		
420 425 430		
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Ser Gly Ile Leu Ser Leu Asp Phe Leu Leu Glu Leu Leu Glu Leu Gln		
435 440 445		
gag agg ctt cga cac ctg caa gtg tgg tcc cct gag gca gag cgc aac		1392
Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Glu Arg Asn		
450 455 460		
atc tcc ctc cag gac atc tgc tat gcc ccc ctc aac cca tat aac acc		1440
Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Tyr Asn Thr		
465 470 475 480		
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Ser Leu Ser Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn		
485 490 495		
aac cgc acc ctc ctg atg ctc acg gcc aac cag act ctg aat ggc cag		1536
Asn Arg Thr Leu Leu Met Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln		
500 505 510		

acc tcc ctg gtg gac tgg aag gac cat ttc ctc tac tgt gca aat gcc	515	520	525	1584
Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala				
cct ctc acg ttc aaa gat ggc acg tct ctg gcc ctg agc tgc atg gct	530	535	540	1632
Pro Leu Thr Phe Lys Asp Gly Thr Ser Leu Ala Leu Ser Cys Met Ala				
gac tac ggg gct cct gtc ttc ccc ttc ctt gct gtt ggg gga tac caa	545	550	555	1680
Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln				
ggc acg gac tat tcc gag gca gaa gcg ctg atc ata acc ttc tct ctc	565	570	575	1728
Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Leu				
aat aac tac ccc gct gat gat ccc cgc atg gcc cag gcc aag ctc tgg	580	585	590	1776
Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala Gln Ala Lys Leu Trp				
gag gag gct ttc ttg aag gaa atg gaa tcc ttc cag agg aac aca agt	595	600	605	1824
Glu Glu Ala Phe Leu Lys Glu Met Glu Ser Phe Gln Arg Asn Thr Ser				
gac aag ttc cag gtt gcg ttc tca gct gag cgc tct ctg gag gat gag	610	615	620	1872
Asp Lys Phe Gln Val Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu				
atc aac cgc acc acc atc cag gac ctg cct gtc ttt gcc gtc agc tac	625	630	635	1920
Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Val Ser Tyr				
att atc gtc ttc ctg tac atc tcc ctg gcc ctg ggc agc tac tcc aga	645	650	655	1968
Ile Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg				
tgc agc cga gta gcg gtg gag tcc aag gct act ctg ggc cta ggt ggg	660	665	670	2016
Cys Ser Arg Val Ala Val Glu Ser Lys Ala Thr Leu Gly Leu Gly Gly				
gtg att gtt gtg ctg gga gca gtt ctg gct gcc atg ggc ttc tac tcc	675	680	685	2064
Val Ile Val Val Leu Gly Ala Val Leu Ala Ala Met Gly Phe Tyr Ser				
tac ctg ggt gtc ccc tct ctg gtt atc atc caa gtg gta cct ttc	690	695	700	2112
Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe				
ctg gtg cta gct gtg gga gct gac aac atc ttc atc ttt gtt ctt gag	705	710	715	2160
Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu				
tac cag agg cta cct agg atg cct ggg gaa cag cga gag gct cac att	725	730	735	2208
Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile				
ggc cgc acc ctg ggc agt gtg gcc ccc agc atg ctg ctg tgc agc ctc	740	745	750	2256
Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu				
tct gag gcc atc tgc ttc ttt cta ggg gcc ctg acc ccc atg cca gct				2304

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala			
755	760	765	
gtg agg acc ttc gcc ttg acc tct ggc tta gca att atc ctc gac ttc			2352
Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Leu Asp Phe			
770	775	780	
ctg ctc cag atg act gcc ttt gtg gcc ctg ctc tcc ctg gat agc aag			2400
Leu Leu Gln Met Thr Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys			
785	790	795	800
agg cag gag gcc tct cgc ccg gat gtc tta tgc tgc ttt tca acc cgg			2448
Arg Gln Glu Ala Ser Arg Pro Asp Val Leu Cys Cys Phe Ser Thr Arg			
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aag ctg ccc cca cct aaa gaa aaa gaa ggc ctc tta ctc cgc ttc ttc			2496
Lys Leu Pro Pro Lys Glu Lys Glu Gly Leu Leu Arg Phe Phe			
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cgc aag ata tac gct cct ttc ctg ctg cac aga ttc atc cgc cct gtt			2544
Arg Lys Ile Tyr Ala Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val			
835	840	845	
gtg atg ctg ctg ttt ctg acc ctg ttt gga gca aat ctc tac tta atg			2592
Val Met Leu Leu Phe Leu Thr Leu Phe Gly Ala Asn Leu Tyr Leu Met			
850	855	860	
tgc aac atc aac gtg ggg cta gac cag gag ctg gct ctg ccc aag gac			2640
Cys Asn Ile Asn Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp			
865	870	875	880
tcg tac ttg ata gac tac ttc ctc ttt ctg aac cga tac ctt gaa gtg			2688.
Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val			
885	890	895	
ggg cct cca gtg tac ttt gtc acc acc tcg ggc ttc aac ttc tcc agc			2736
Gly Pro Pro Val Tyr Phe Val Thr Thr Ser Gly Phe Asn Phe Ser Ser			
900	905	910	
gag gca ggc atg aac gcc act tgc tct agc gca ggc tgt aag agc ttc			2784
Glu Ala Gly Met Asn Ala Thr Cys Ser Ser Ala Gly Cys Lys Ser Phe			
915	920	925	
tcc cta acc cag aaa atc cag tat gcc agt gaa ttc cct gac cag tct			2832
Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asp Gln Ser			
930	935	940	
tac gtg gct att gct gca tcc tcc tgg gta gat gac ttc atc gac tgg			2880
Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp			
945	950	955	960
ctg acc ccg tcc tcc tcc tgc tgt cgc ctt tat ata cgt ggc ccc cat			2928
Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Arg Gly Pro His			
965	970	975	
aag gat gag ttc tgt ccc tca acg gat act tcc ttc aac tgc tta aaa			2976
Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys			
980	985	990	
aac tgc atg aac cgc act ctg ggt cct gtg agg ccc aca gcg gaa cag			3024
Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Ala Glu Gln			

995	1000	1005	
ttt cat aag tac ctg ccc tgg	ttc ctg aat gat ccg	ccc aat atc	3069
Phe His Lys Tyr Leu Pro Trp	Phe Leu Asn Asp Pro	Pro Asn Ile	
1010	1015	1020	
aga tgt ccc aaa ggg ggt cta	gca gcg tat aga acg	tct gtg aat	3114
Arg Cys Pro Lys Gly Gly Leu	Ala Ala Tyr Arg Thr	Ser Val Asn	
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ttg agc tca gat ggc cag gtt	ata gcc tcc cag ttc	atg gcc tac	3159
Leu Ser Ser Asp Gly Gln Val	Ile Ala Ser Gln Phe	Met Ala Tyr	
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cac aag ccc tta agg aac tca	cag gac ttc aca gaa	gct ctc cgg	3204
His Lys Pro Leu Arg Asn Ser	Gln Asp Phe Thr Glu	Ala Leu Arg	
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gcg tcc cgg ttg cta gca gcc	aac atc aca gct gac	cta cgg aag	3249
Ala Ser Arg Leu Leu Ala Ala	Asn Ile Thr Ala Asp	Leu Arg Lys	
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gtg cct ggg aca gat cca aac	ttt gag gtc ttc cct	tac acg atc	3294
Val Pro Gly Thr Asp Pro Asn	Phe Glu Val Phe Pro	Tyr Thr Ile	
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Ser Asn Val Phe Tyr Gln Gln	Tyr Leu Thr Val Leu	Pro Glu Gly	
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Ile Phe Thr Leu Ala Leu Cys	Phe Val Pro Thr Phe	Val Val Cys	
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tac ctc cta ctg ggc ctg gac	atg tgc tca ggg atc	ctc aac cta	3429
Tyr Leu Leu Leu Gly Leu Asp	Met Cys Ser Gly Ile	Leu Asn Leu	
1130	1135	1140	
ctc tcc atc att atg att ctc	gtg gac acc att ggc	ctc atg gct	3474
Leu Ser Ile Ile Met Ile Leu	Val Asp Thr Ile Gly	Leu Met Ala	
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gtg tgg ggt atc agc tat aat	gcg gta tcc ctc atc	aac ctt gtc	3519
Val Trp Gly Ile Ser Tyr Asn	Ala Val Ser Leu Ile	Asn Leu Val	
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acg gca gtg ggc atg tct gtg	gag ttt gtg tcc cac	atc act cgg	3564
Thr Ala Val Gly Met Ser Val	Glu Phe Val Ser His	Ile Thr Arg	
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Ser Phe Ala Val Ser Thr Lys	Pro Thr Arg Leu Glu	Arg Ala Lys	
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Asp Ala Thr Val Phe Met Gly	Ser Ala Val Phe Ala	Gly Val Ala	
1205	1210	1215	
atg acc aac ttc cca ggc atc	ctc atc ttg ggc ttt	gcc caa gcc	3699
Met Thr Asn Phe Pro Gly Ile	Leu Ile Leu Gly Phe	Ala Gln Ala	
1220	1225	1230	

cag ctt att cag atc ttc ttc	ttc cgc ctc aac ctt	ctg atc acc	3744
Gln Leu Ile Gln Ile Phe Phe	Phe Arg Leu Asn Leu	Leu Ile Thr	
1235	1240	1245	
ttg ctg ggt ctg ctg cat ggc	ctg gtc ttc ctg ccg	gtt gtc ctc	3789
Leu Leu Gly Leu Leu His Gly	Leu Val Phe Leu Pro	Val Val Leu	
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agc tat ctg gga cca gat gtt	aac caa gct ctg gta	cag gag gag	3834
Ser Tyr Leu Gly Pro Asp Val	Asn Gln Ala Leu Val	Gln Glu Glu	
1265	1270	1275	
aaa cta gcc agc gag gca gca	gtg gcc cca gag cct	tct tgc cca	3879
Lys Leu Ala Ser Glu Ala Ala	Val Ala Pro Glu Pro	Ser Cys Pro	
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Gln Tyr Pro Ser Pro Ala Asp	Ala Asp Ala Asn Val	Asn Tyr Gly	
1295	1300	1305	
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Phe Ala Pro Glu Leu Ala His	Gly Ala Asn Ala Ala	Arg Ser Ser	
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<213> Rattus sp.

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Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu		
35	40	45

Thr Ser Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg His		
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Val Thr Gly Glu His Leu Ala Leu Leu Gln Arg Ile Cys Pro Arg Leu			
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Tyr Asn Gly Pro Asn Thr Thr Phe Ala Cys Cys Ser Thr Lys Gln Leu
85 90 95

Leu Ser Leu Glu Ser Ser Met Ser Ile Thr Lys Ala Leu Leu Thr Arg
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Cys Pro Ala Cys Ser Asp Asn Phe Val Ser Leu His Cys His Asn Thr
115 120 125

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130 135 140

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Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Gln Val Arg
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Ala Pro Cys Asn Glu Ser Gln Gly Asp Asp Ser Ala Val Cys Ser Cys
245 250 255

Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Glu Ala Leu
260 265 270

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275 280 285

Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Ala Val Leu Val Arg
290 295 300

Leu Arg Val Val Ser Asn Arg Asn Lys Asn Lys Ala Glu Gly Pro Gln
305 310 315 320

Glu Ala Pro Lys Leu Pro His His Lys Leu Ser Pro His Thr Ile
325 330 335

Leu Gly Arg Phe Phe Gln Asn Trp Gly Thr Arg Val Ala Ser Trp Pro
340 345 350

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355 360 365

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370 375 380

Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ser Phe His Asp Glu His
385 390 395 400

Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Arg Asn
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Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
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Pro Leu Thr Phe Lys Asp Gly Thr Ser Leu Ala Leu Ser Cys Met Ala
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Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Leu

565

570

575

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595 600 605

Asp Lys Phe Gln Val Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu
610 615 620

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Ile Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg
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Cys Ser Arg Val Ala Val Glu Ser Lys Ala Thr Leu Gly Leu Gly Gly
660 665 670

Val Ile Val Val Leu Gly Ala Val Leu Ala Ala Met Gly Phe Tyr Ser
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Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe
690 695 700

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705 710 715 720

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Gly Arg Thr Leu Gly Ser Val Ala Pro Ser Met Leu Leu Cys Ser Leu
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Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Leu Asp Phe
770 775 780

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Val Met Leu Leu Phe Leu Thr Leu Phe Gly Ala Asn Leu Tyr Leu Met
850 855 860

Cys Asn Ile Asn Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
865 870 875 880

Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val
885 890 895

Gly Pro Pro Val Tyr Phe Val Thr Thr Ser Gly Phe Asn Phe Ser Ser
900 905 910

Glu Ala Gly Met Asn Ala Thr Cys Ser Ser Ala Gly Cys Lys Ser Phe
915 920 925

Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asp Gln Ser
930 935 940

Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
945 950 955 960

Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Arg Gly Pro His
965 970 975

Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys
980 985 990

Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Ala Glu Gln
995 1000 1005

Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Pro Pro Asn Ile
1010 1015 1020

Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn
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Leu Ser Ser Asp Gly Gln Val Ile Ala Ser Gln Phe Met Ala Tyr
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His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg
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Val Pro Gly Thr Asp Pro Asn Phe Glu Val Phe Pro Tyr Thr Ile
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1100 1105 1110

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Ser Phe Ala Val Ser Thr Lys Pro Thr Arg Leu Glu Arg Ala Lys
1190 1195 1200

Asp Ala Thr Val Phe Met Gly Ser Ala Val Phe Ala Gly Val Ala
1205 1210 1215

Met Thr Asn Phe Pro Gly Ile Leu Ile Leu Gly Phe Ala Gln Ala
1220 1225 1230

Gln Leu Ile Gln Ile Phe Phe Phe Arg Leu Asn Leu Leu Ile Thr
1235 1240 1245

Leu Leu Gly Leu Leu His Gly Leu Val Phe Leu Pro Val Val Leu
1250 1255 1260

Ser Tyr Leu Gly Pro Asp Val Asn Gln Ala Leu Val Gln Glu Glu
1265 1270 1275

Lys Leu Ala Ser Glu Ala Ala Val Ala Pro Glu Pro Ser Cys Pro
1280 1285 1290

Gln Tyr Pro Ser Pro Ala Asp Ala Asp Ala Asn Val Asn Tyr Gly
1295 1300 1305

Phe Ala Pro Glu Leu Ala His Gly Ala Asn Ala Ala Arg Ser Ser
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Leu Pro Lys Ser Asp Gln Lys Phe
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Met Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu
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cgc ttg gcc cag agt gag cct tac aca acc atc cac cag cct ggc tac 96
Arg Leu Ala Gln Ser Glu Pro Tyr Thr Thr Ile His Gln Pro Gly Tyr
20 25 30

tgc gcc ttc tat gac gaa tgt ggg aag aac cca gag ctg tct gga agc 144
Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser
35 40 45

ctc atg aca ctc tcc aac gtg tcc tgc ctg tcc aac acg ccg gcc cgc 192
Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg
50 55 60

aag atc aca ggt gat cac ctg atc cta tta cag aag atc tgc ccc cgc 240
Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg
65 70 75 80

ctc tac acc ggc ccc aac acc caa gcc tgc tgc tcc gcc aag cag ctg 288
Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu
85 90 95

gta tca ctg gaa gcg agt ctg tcg atc acc aag gcc ctc ctc acc cgc Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg 100 105 110	336
tgc cca gcc tgc tct gac aat ttt gtg aac ctg cac tgc cac aac acg Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr 115 120 125	384
tgc agc ccc aat cag agc ctc ttc atc aat gtg acc cgc gtg gcc cag Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln 130 135 140	432
cta ggg gct gga caa ctc cca gct gtg gtg gcc tat gag gcc ttc tac Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr 145 150 155 160	480
cag cat agc ttt gcc gag cag agc tat gac tcc tgc agc cgt gtg cgc Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg 165 170 175	528
gtc cct gca gct gcc acg ctg gct gtg ggc acc atg tgt ggc gtg tat Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr 180 185 190	576
ggc tct gcc ctt tgc aat gcc cag cgc tgg ctc aac ttc cag gga gac Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp 195 200 205	624
aca ggc aat ggt ctg gcc cca ctg gac atc acc ttc cac ctc ttg gag Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu 210 215 220	672
cct ggc cag gcc gtg ggg agt ggg att cag cct ctg aat gag ggg gtt Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val 225 230 235 240	720
gca cgt tgc aat gag tcc caa ggt gac gac gtg gcg acc tgc tcc tgc Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys 245 250 255	768
caa gac tgt gct gca tcc tgt cct gcc ata gcc cgc ccc cag gcc ctc Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu 260 265 270	816
gac tcc acc ttc tac ctg ggc cag atg ccg ggc agt ctg gtc ctc atc Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile 275 280 285	864
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ttc cgt gtg gcc ccc gcc agg gac aaa agc aag atg gtg gac ccc aag Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys 305 310 315 320	960
aag ggc acc agc ctc tct gac aag ctc agc ttc tcc acc cac acc ctc Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu 325 330 335	1008
ctt ggc cag ttc cag ggc tgg ggc acg tgg gtg gct tcg tgg cct	1056

Leu	Gly	Gln	Phe	Phe	Gln	Gly	Trp	Gly	Thr	Trp	Val	Ala	Ser	Trp	Pro	
340																350
ctg	acc	atc	ttg	gtg	cta	tct	gtc	atc	ccg	gtg	gtg	gcc	ttg	gca	gcg	1104
Leu	Thr	Ile	Leu	Val	Leu	Ser	Val	Ile	Pro	Val	Val	Ala	Leu	Ala	Ala	
355																365
ggc	ctg	gtc	ttt	aca	gaa	ctc	act	acg	gac	ccc	gtg	gag	ctg	tgg	tcg	1152
Gly	Leu	Val	Phe	Thr	Glu	Leu	Thr	Thr	Asp	Pro	Val	Glu	Leu	Trp	Ser	
370																380
gcc	ccc	aac	agc	caa	gcc	cgg	agt	gag	aaa	gct	ttc	cat	gac	cag	cat	1200
Ala	Pro	Asn	Ser	Gln	Ala	Arg	Ser	Glu	Lys	Ala	Phe	His	Asp	Gln	His	
385																400
ttc	ggc	ccc	ttc	ttc	cga	acc	aac	cag	gtg	atc	ctg	acg	gct	cct	aac	1248
Phe	Gly	Pro	Phe	Phe	Arg	Thr	Asn	Gln	Val	Ile	Leu	Thr	Ala	Pro	Asn	
405																415
cgg	tcc	agc	tac	agg	tat	gac	tct	ctg	ctg	ggg	ccc	aag	aac	ttc	1296	
Arg	Ser	Ser	Tyr	Arg	Tyr	Asp	Ser	Leu	Leu	Leu	Gly	Pro	Lys	Asn	Phe	
420																430
agc	gga	atc	ctg	gac	ctg	gac	ttg	ctg	ctg	gag	ctg	cta	gag	ctg	cag	1344
Ser	Gly	Ile	Leu	Asp	Leu	Asp	Leu	Leu	Leu	Glu	Leu	Leu	Glu	Leu	Gln	
435																445
gag	agg	ctg	cgg	cac	ctc	cag	gta	tgg	tcg	ccc	gaa	gca	cag	cgc	aac	1392
Glu	Arg	Leu	Arg	His	Leu	Gln	Val	Trp	Ser	Pro	Glu	Ala	Gln	Arg	Asn	
450																460
atc	tcc	ctg	cag	gac	atc	tgc	tac	gcc	ccc	ctc	aat	ccg	gac	aat	acc	1440
Ile	Ser	Leu	Gln	Asp	Ile	Cys	Tyr	Ala	Pro	Leu	Asn	Pro	Asp	Asn	Thr	
465																480
agt	ctc	tac	gac	tgc	tgc	atc	aac	agc	ctc	ctg	cag	tat	ttc	cag	aac	1488
Ser	Leu	Tyr	Asp	Cys	Cys	Ile	Asn	Ser	Leu	Leu	Gln	Tyr	Phe	Gln	Asn	
485																495
aac	cgc	acg	ctc	ctg	ctc	aca	gcc	aac	cag	aca	ctg	atg	ggg	cag	1536	
Asn	Arg	Thr	Leu	Leu	Leu	Leu	Thr	Ala	Asn	Gln	Thr	Leu	Met	Gly	Gln	
500																510
acc	tcc	caa	gtc	gac	tgg	aag	gac	cat	ttt	ctg	tac	tgt	gcc	aat	gcc	1584
Thr	Ser	Gln	Val	Asp	Trp	Lys	Asp	His	Phe	Leu	Tyr	Cys	Ala	Asn	Ala	
515																525
ccg	ctc	acc	ttc	aag	gat	ggc	aca	gcc	ctg	gcc	ctg	agc	tgc	atg	gct	1632
Pro	Leu	Thr	Phe	Lys	Asp	Gly	Thr	Ala	Leu	Ala	Leu	Ser	Cys	Met	Ala	
530																540
gac	tac	ggg	gcc	cct	gtc	ttc	ccc	ttc	ctt	gcc	att	ggg	ggg	tac	aaa	1680
Asp	Tyr	Gly	Ala	Pro	Val	Phe	Pro	Phe	Leu	Ala	Ile	Gly	Gly	Tyr	Lys	
545																560
gga	aag	gac	tat	tct	gag	gca	gag	gcc	ctg	atc	atg	acg	ttc	tcc	ctc	1728
Gly	Lys	Asp	Tyr	Ser	Glu	Ala	Glu	Ala	Leu	Ile	Met	Thr	Phe	Ser	Leu	
565																575
aac	aat	tac	cct	gcc	ggg	gac	ccc	cgt	ctg	gcc	cag	gcc	aag	ctg	tgg	1776
Asn	Asn	Tyr	Pro	Ala	Gly	Asp	Pro	Arg	Leu	Ala	Gln	Ala	Lys	Leu	Trp	

580	585	590	
gag gag gcc ttc tta gag gaa atg cga gcc ttc cag cgt cgg atg gct Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala 595	600	605	1824
ggc atg ttc cag gtc acg ttc acg gct gag cgc tct ctg gaa gac gag Gly Met Phe Gln Val Thr Phe Thr Ala Glu Arg Ser Leu Glu Asp Glu 610	615	620	1872
atc aat cgc acc aca gct gaa gac ctg ccc atc ttt gcc acc agc tac Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr 625	630	635	1920
att gtc ata ttc ctg tac atc tct ctg gcc ctg ggc agc tat tcc agc Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser 645	650	655	1968
tgg agc cga gtg atg gtg gac tcc aag gcc acg ctg ggc ctc ggc ggg Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly 660	665	670	2016
gtg gcc gtg gtc ctg gga gca gtc atg gct gcc atg ggc ttc ttc tcc Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser 675	680	685	2064
tac ttg ggt atc cgc tcc tcc ctg gtc atc ctg caa gtg gtt cct ttc Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe 690	695	700	2112
ctg gtg ctg tcc gtg ggg gct gat aac atc ttc atc ttt gtt ctc gag Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu 705	710	715	2160
tac cag agg ctg ccc cgg agg cct ggg gag cca cga gag gtc cac att Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile 725	730	735	2208
ggg cga gcc cta ggc agg gtg gct ccc agc atg ctg ttg tgc agc ctc Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu 740	745	750	2256
tct gag gcc atc tgc ttc ttc cta ggg gcc ctg acc ccc atg cca gct Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala 755	760	765	2304
gtg cgg acc ttt gcc ctg acc tct ggc ctt gca gtg atc ctt gac ttc Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe 770	775	780	2352
ctc ctg cag atg tca gcc ttt gtg gcc ctg ctc tcc ctg gac agc aag Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys 785	790	795	2400
agg cag gag gcc tcc cgg ttg gac gtc tgc tgc tgt gtc aag ccc cag Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln 805	810	815	2448
gag ctg ccc ccg cct ggc cag gga gag ggg ctc ctg ctt ggc ttc ttc Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe 820	825	830	2496

caa aag gct tat gcc ccc ttc ctg ctg cac tgg atc act cga ggt gtt		2544	
Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val			
835	840	845	
gtg ctg ctg ctg ttt ctc gcc ctg ttc gga gtg agc ctc tac tcc atg		2592	
Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met			
850	855	860	
tgc cac atc agc gtg gga ctg gac cag gag ctg gcc ctg ccc aag gac		2640	
Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp			
865	870	875	880
tcg tac ctg ctt gac tat ttc ctc ttt ctg aac cgc tac ttc gag gtg		2688	
Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val			
885	890	895	
ggg gcc ccg gtg tac ttt gtt acc acc ttg ggc tac aac ttc tcc agc		2736	
Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser			
900	905	910	
gag gct ggg atg aat gcc atc tgc tcc agt gca ggc tgc aac aac ttc		2784	
Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe			
915	920	925	
tcc ttc acc cag aag atc cag tat gcc aca gag ttc cct gag cag tct		2832	
Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser			
930	935	940	
tac ctg gcc atc cct gcc tcc tcc tgg gtg gat gac ttc att gac tgg		2880	
Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp			
945	950	955	960
ctg acc ccg tcc tcc tgc tgc cgc ctt tat ata tct ggc ccc aat aag		2928	
Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys			
965	970	975	
gac aag ttc tgc ccc tcg acc gtc aac tct ctg aac tgc cta aag aac		2976	
Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn			
980	985	990	
tgc atg agc atc acg atg ggc tct gtg agg ccc tcg gtg gag cag ttc		3024	
Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe			
995	1000	1005	
cat aag tat ctt ccc tgg ttc ctg aac gac cgg ccc aac atc aaa		3069	
His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys			
1010	1015	1020	
tgt ccc aaa ggc ggc ctg gca gca tac agc acc tct gtg aac ttg		3114	
Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu			
1025	1030	1035	
act tca gat ggc cag gtt tta gcc tcc agg ttc atg gcc tat cac		3159	
Thr Ser Asp Gly Gln Val Leu Ala Ser Arg Phe Met Ala Tyr His			
1040	1045	1050	
aag ccc ctg aaa aac tca cag gat tac aca gaa gct ctg cgg gca		3204	
Lys Pro Leu Lys Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala			
1055	1060	1065	

gct cga gag ctg gca gcc aac	atc act gct gac ctg	cg ^g aaa gtg	3249
Ala Arg Glu Leu Ala Ala Asn	Ile Thr Ala Asp Leu	Arg Lys Val	
1070	1075	1080	
cct gga aca gac ccg gct ttt	gag gtc ttc ccc tac	acg atc acc	3294
Pro Gly Thr Asp Pro Ala Phe	Glu Val Phe Pro Tyr	Thr Ile Thr	
1085	1090	1095	
aat gtg ttt tat gag cag tac	ctg acc atc ctc cct	gag ggg ctc	3339
Asn Val Phe Tyr Glu Gln Tyr	Leu Thr Ile Leu Pro	Glu Gly Leu	
1100	1105	1110	
ttc atg ctc agc ctc tgc ctt	gtg ccc acc ttc gct	gtc tcc tgc	3384
Phe Met Leu Ser Leu Cys Leu	Val Pro Thr Phe Ala	Val Ser Cys	
1115	1120	1125	
ctc ctg ctg ggc ctg gac ctg	cgc tcc ggc ctc ctc	aac ctg ctc	3429
Leu Leu Leu Gly Leu Asp Leu	Arg Ser Gly Leu Leu	Asn Leu Leu	
1130	1135	1140	
tcc att gtc atg atc ctc gtg	gac act gtc ggc ttc	atg gcc ctg	3474
Ser Ile Val Met Ile Leu Val	Asp Thr Val Gly Phe	Met Ala Leu	
1145	1150	1155	
tgg gac atc agt tac aat gct	gtg tcc ctc atc aac	ctg gtc tcg	3519
Trp Asp Ile Ser Tyr Asn Ala	Val Ser Leu Ile Asn	Leu Val Ser	
1160	1165	1170	
gcg gtg ggc atg tct gtg gag	ttt gtg tcc cac att	acc cgc tcc	3564
Ala Val Gly Met Ser Val Glu	Phe Val Ser His Ile	Thr Arg Ser	
1175	1180	1185	
ttt gcc atc agc acc aag ccc	acc tgg ctg gag agg	gcc aaa gag	3609
Phe Ala Ile Ser Thr Lys Pro	Thr Trp Leu Glu Arg	Ala Lys Glu	
1190	1195	1200	
gcc acc atc tct atg gga agt	gcg gtg ttt gca ggt	gtg gcc atg	3654
Ala Thr Ile Ser Met Gly Ser	Ala Val Phe Ala Gly	Val Ala Met	
1205	1210	1215	
acc aac ctg cct ggc atc ctt	gtc ctg ggc ctc gcc	aag gcc cag	3699
Thr Asn Leu Pro Gly Ile Leu	Val Leu Gly Leu Ala	Lys Ala Gln	
1220	1225	1230	
ctc att cag atc ttc ttc ttc	cgc ctc aac ctc ctg	atc act ctg	3744
Leu Ile Gln Ile Phe Phe Phe	Arg Leu Asn Leu Leu	Ile Thr Leu	
1235	1240	1245	
ctg ggc ctg ctg cat ggc ttg	gtc ttc ctg ccc gtc	atc ctc agc	3789
Leu Gly Leu Leu His Gly Leu	Val Phe Leu Pro Val	Ile Leu Ser	
1250	1255	1260	
tac gtg ggg cct gac gtt aac	ccg gct ctg gca ctg	gag cag aag	3834
Tyr Val Gly Pro Asp Val Asn	Pro Ala Leu Ala Leu	Glu Gln Lys	
1265	1270	1275	
cg ^g gct gag gag ggc gtg gca	gca gtc atg gtg gcc	tct tgc cca	3879
Arg Ala Glu Glu Ala Val Ala	Ala Val Met Val Ala	Ser Cys Pro	
1280	1285	1290	
aat cac ccc tcc cga gtc tcc	aca gct gac aac atc	tat gtc aac	3924

Asn His Pro Ser Arg Val Ser	Thr Ala Asp Asn Ile	Tyr Val Asn	
1295	1300	1305	
cac agc ttt gaa ggt tct atc	aaa ggt gct ggt gcc	atc agc aac	3969
His Ser Phe Glu Gly Ser Ile	Lys Gly Ala Gly Ala	Ile Ser Asn	
1310	1315	1320	
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Arg Leu Ala Gln Ser Glu Pro Tyr	Thr Thr Ile His Gln Pro Gly Tyr		
20	25	30	
Cys Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser			
35	40	45	
Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg			
50	55	60	
Lys Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg			
65	70	75	80
Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu			
85	90	95	
Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg			
100	105	110	
Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr			
115	120	125	
Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln			
130	135	140	
Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr			

145 150 155 160

Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg
165 170 175

Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr
180 185 190

Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
195 200 205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
210 215 220

Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val
225 230 240

Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys
245 250 255

Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu
260 265 270

Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile
275 280 285

Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly
290 295 300

Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys
305 310 315 320

Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu
325 330 335

Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro
340 345 350

Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala
355 360 365

Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
370 375 380

Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His
385 390 395 400

Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn
405 410 415

Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe
420 425 430

Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln
435 440 445

Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn
450 455 460

Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr
465 470 475 480

Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn
485 490 495

Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln
500 505 510

Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
515 520 525

Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala
530 535 540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys
545 550 555 560

Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu
565 570 575

Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp
580 585 590

Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala
595 600 605

Gly Met Phe Gln Val Thr Phe Thr Ala Glu Arg Ser Leu Glu Asp Glu
610 615 620

Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr
625 630 635 640

Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser
645 650 655

Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
660 665 670

Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser
675 680 685

Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe
690 695 700

Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
705 710 715 720

Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile
725 730 735

Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu
740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe
770 775 780

Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
785 790 795 800

Arg Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln
805 810 815

Glu Leu Pro Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe
820 825 830

Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val
835 840 845

Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met
850 855 860

Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
865 870 875 880

Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val
885 890 895

Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser
900 905 910

Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Asn Asn Phe
915 920 925

Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser
930 935 940

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Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys
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Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn
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Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe
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Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu
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Thr Ser Asp Gly Gln Val Leu Ala Ser Arg Phe Met Ala Tyr His
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Lys Pro Leu Lys Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala
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Ala Arg Glu Leu Ala Ala Asn Ile Thr Ala Asp Leu Arg Lys Val
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Pro Gly Thr Asp Pro Ala Phe Glu Val Phe Pro Tyr Thr Ile Thr
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Phe Met Leu Ser Leu Cys Leu Val Pro Thr Phe Ala Val Ser Cys

1115

1120

1125

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Arg Ala Glu Glu Ala Val Ala Ala Val Met Val Ala Ser Cys Pro
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Asn His Pro Ser Arg Val Ser Thr Ala Asp Asn Ile Tyr Val Asn
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1	5	10	15
tcg gcc cag ggt gag ctc tac aca ccc act cac aaa gct ggc ttc tgc			96
Ser Ala Gln Gly Glu Leu Tyr Thr Pro Thr His Lys Ala Gly Phe Cys			
20	25	30	
acc ttt tat gaa gag tgt ggg aag aac cca gag ctt tct gga ggc ctc			144
Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu			
35	40	45	
aca tca cta tcc aat atc tcc tgc ttg tct aat acc cca gcc cgc cat			192
Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His			
50	55	60	
gtc aca ggt gac cac ctg gct ctt ctc cag cgc gtc tgt ccc cgc cta			240
Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu			
65	70	75	80
tac aat ggc ccc aat gac acc tat gcc tgt tgc tct acc aag cag ctg			288
Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu			
85	90	95	
gtg tca tta gac agt agc ctg tct atc acc aag gcc ctc ctt aca cgc			336
Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg			
100	105	110	
tgc ccg gca tgc tct gaa aat ttt gtg agc ata cac tgt cat aat acc			384
Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr			
115	120	125	
tgc agc cct gac cag agc ctc ttc atc aat gtt act cgc gtg gtt cag			432
Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln			
130	135	140	
cgg gac cct gga cag ctt cct gct gtg gtg gcc tat gag gcc ttt tat			480
Arg Asp Pro Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr			
145	150	155	160
caa cgc agt ttt gca gag aag gcc tat gag tcc tgt agc cgg gtg cgc			528
Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg			
165	170	175	
atc cct gca gct gcc tcg ctg gct gtg ggc agc atg tgt gga gtg tat			576
Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr			
180	185	190	

ggc tct gcc ctc tgc aat gct cag cgc tgg ctc aac ttc caa gga gac Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp 195 200 205	624
aca ggg aat ggc ctg gct ccg ctg gac atc acc ttc cac ctc ttg gag Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu 210 215 220	672
cct ggc cag gcc ctg gca gat ggg atg aag cca ctg gat ggg aag atc Pro Gly Gln Ala Leu Ala Asp Gly Met Lys Pro Leu Asp Gly Lys Ile 225 230 235 240	720
aca ccc tgc aat gag tcc cag ggt gaa gac tcg gca gcc tgt tcc tgc Thr Pro Cys Asn Glu Ser Gln Gly Glu Asp Ser Ala Ala Cys Ser Cys 245 250 255	768
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cgc cct tct ttc tac atg ggt cga atg cca ggc tgg ctg gct ctc atc Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile 275 280 285	864
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ctc cga gtg gct tcc aac agg aac aac aag aca gca ggc tcc cag Leu Arg Val Ala Ser Asn Arg Asn Lys Asn Lys Thr Ala Gly Ser Gln 305 310 315 320	960
gaa gcc ccc aac ctc cct cgt aag cgc aga ttc tca cct cac act gtc Glu Ala Pro Asn Leu Pro Arg Lys Arg Arg Phe Ser Pro His Thr Val 325 330 335	1008
ctt ggc cgg ttc gag agc tgg gga aca agg gtg gcc tca tgg cca Leu Gly Arg Phe Glu Ser Trp Gly Thr Arg Val Ala Ser Trp Pro 340 345 350	1056
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gcc cct aaa agc caa gcc cgg aaa gaa aag gct ttc cat gac gag cat Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ala Phe His Asp Glu His 385 390 395 400	1200
ttt ggc ccc ttc ttc cga acc aac cag att ttt gtg aca gct aag aac Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Lys Asn 405 410 415	1248
agg tcc agc tac aag tac gac tcc ctg cta ggg ccc aag aac ttc Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe 420 425 430	1296
agt ggg atc cta tcc ctg gac ttg ctg cag gag ctg ttg gag cta cag	1344

Ser Gly Ile Leu Ser Leu Asp Leu Leu Gln Glu Leu Leu Glu Leu Gln			
435	440	445	
gag aga ctt cga cac ctg caa gtg tgg tcc cat gag gca cag cgc aac			1392
Glu Arg Leu Arg His Leu Gln Val Trp Ser His Glu Ala Gln Arg Asn			
450	455	460	
atc tcc ctc cag gac atc tgc tat gct ccc ctc aac ccg cat aac acc			1440
Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr			
465	470	475	480
agc ctc act gac tgc tgt gtc aac agc ctc ctt caa tac ttc cag aac			1488
Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn			
485	490	495	
aac cac aca ctc ctg ctg aca gcc aat cag act ctg aat ggc cag			1536
Asn His Thr Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln			
500	505	510	
acc tcc ctg gtg gac tgg aag gac cat ttc ctc tac tgt gcc aat gcc			1584
Thr Ser Leu Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala			
515	520	525	
cct ctc acg tac aaa gat ggc aca gcc ctg gcc ctg agc tgc ata gct			1632
Pro Leu Thr Tyr Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Ile Ala			
530	535	540	
gac tac ggg gca cct gtc ttc ccc ttc ctt gct gtt ggg ggc tac caa			1680
Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Val Gly Gly Tyr Gln			
545	550	555	560
ggg acg gac tac tcg gag gca gaa gcc ctg atc ata acc ttc tct atc			1728
Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile			
565	570	575	
aat aac tac ccc gct gat gat ccc cgc atg gcc cac gcc aag ctc tgg			1776
Asn Asn Tyr Pro Ala Asp Asp Pro Arg Met Ala His Ala Lys Leu Trp			
580	585	590	
gag gag gct ttc ttg aag gaa atg caa tcc ttc cag aga agc aca gct			1824
Glu Glu Ala Phe Leu Lys Glu Met Gln Ser Phe Gln Arg Ser Thr Ala			
595	600	605	
gac aag ttc cag att gcg ttc tca gct gag cgt tct ctg gag gac gag			1872
Asp Lys Phe Gln Ile Ala Phe Ser Ala Glu Arg Ser Leu Glu Asp Glu			
610	615	620	
atc aat cgc act acc atc cag gac ctg cct gtc ttt gcc atc agc tac			1920
Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr			
625	630	635	640
ctt atc gtc ttc ctg tac atc tcc ctg gcc ctg ggc agc tac tcc aga			1968
Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg			
645	650	655	
tgg agc cga gtt gcg gtg gat tcc aag gct act ctg ggc cta ggt ggg			2016
Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly			
660	665	670	
gtg gct gtt gtg ctg gga gca gtc gtc gct gcc atg ggc ttc tac tcc			2064
Val Ala Val Val Leu Gly Ala Val Val Ala Ala Met Gly Phe Tyr Ser			

675	680	685	
tac ctg ggt gtc ccc tcc tct ctg gtc atc att caa gtg gta cct ttc Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Val Pro Phe 690 695 700			2112
ctg gtg ctg gct gtg gga gct gac aac atc ttc atc ttt gtt ctt gag Leu Val Leu Ala Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu 705 710 715 720			2160
tac cag agg ctg cct agg atg ccc ggg gag cag cga gag gct cac att Tyr Gln Arg Leu Pro Arg Met Pro Gly Glu Gln Arg Glu Ala His Ile 725 730 735			2208
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aat ctg ccc cca ccg aaa caa aaa gaa ggc ctc tta ctt tgc ttc ttc Asn Leu Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe 820 825 830			2496
cgc aag ata tac act ccc ttc ctg ctg cac aga ttc atc cgc cct gtt Arg Lys Ile Tyr Thr Pro Phe Leu Leu His Arg Phe Ile Arg Pro Val 835 840 845			2544
gtg ctg ctg ctc ttt ctg gtc ctg ttt gga gca aac ctc tac tta atg Val Leu Leu Phe Leu Val Leu Phe Gly Ala Asn Leu Tyr Leu Met 850 855 860			2592
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ggg cct cca gtg tac ttt gac acc acc tca ggc tac aac ttt tcc acc Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr 900 905 910			2736
gag gca ggc atg aac gcc att tgc tct agt gca ggc tgt gag agc ttc Glu Ala Gly Met Asn Ala Ile Cys Ser Ser Ala Gly Cys Glu Ser Phe 915 920 925			2784

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Ser Leu Thr Gln Lys Ile Gln Tyr Ala Ser Glu Phe Pro Asn Gln Ser	
930 935 940	
tat gtg gct att gct gca tcc tcc tgg gta gat gac ttc atc gac tgg	2880
Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp	
945 950 955 960	
ctg acc cca tcc tcc tgc tgc cgc att tat acc cgt ggc ccc cat	2928
Leu Thr Pro Ser Ser Ser Cys Cys Arg Ile Tyr Thr Arg Gly Pro His	
965 970 975	
aaa gat gag ttc tgt ccc tca acg gat act tcc ttc aac tgt ctc aaa	2976
Lys Asp Glu Phe Cys Pro Ser Thr Asp Thr Ser Phe Asn Cys Leu Lys	
980 985 990	
aac tgc atg aac cgc act ctg ggt ccc gtg aga ccc aca aca gaa cag	3024
Asn Cys Met Asn Arg Thr Leu Gly Pro Val Arg Pro Thr Thr Glu Gln	
995 1000 1005	
ttt cat aag tac ctg ccc tgg ttc ctg aat gat acg ccc aac atc	3069
Phe His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Thr Pro Asn Ile	
1010 1015 1020	
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Arg Cys Pro Lys Gly Gly Leu Ala Ala Tyr Arg Thr Ser Val Asn	
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Leu Ser Ser Asp Gly Gln Ile Ile Ala Ser Gln Phe Met Ala Tyr	
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His Lys Pro Leu Arg Asn Ser Gln Asp Phe Thr Glu Ala Leu Arg	
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Ser Asn Val Phe Tyr Gln Gln Tyr Leu Thr Val Leu Pro Glu Gly	
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Ile Phe Thr Leu Ala Leu Cys Phe Val Pro Thr Phe Val Val Cys	
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Tyr Leu Leu Leu Gly Leu Asp Ile Arg Ser Gly Ile Leu Asn Leu	
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1145 1150 1155	

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Val Trp Gly Ile Ser Tyr Asn	Ala Val Ser Leu Ile	Asn Leu Val	
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Thr Ala Val Gly Met Ser Val	Glu Phe Val Ser His	Ile Thr Arg	
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Ser Phe Ala Val Ser Thr Lys	ctg gag Pro Thr Arg Leu Glu	Arg Ala Lys	
1190	1195	1200	
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Asp Ala Thr Ile Phe Met Gly	Ser Ala Val Phe Ala	Gly Val Ala	
1205	1210	1215	
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Met Thr Asn Phe Pro Gly Ile	Leu Ile Leu Gly Phe	Ala Gln Ala	
1220	1225	1230	
cag ctt atc cag att ttc ttc	ttc cgc ctc aac ctc	ctg atc acc	3744
Gln Leu Ile Gln Ile Phe Phe	Phe Arg Leu Asn Leu	Leu Ile Thr	
1235	1240	1245	
ttg ctg ggt ctg cta cac ggc	ctg gtc ttc ctg ccc	gtt gtc ctc	3789
Leu Leu Gly Leu Leu His Gly	Leu Val Phe Leu Pro	Val Val Leu	
1250	1255	1260	
agc tat ctg ggg cca gat gtt	aac caa gct ctg gta	ctg gag gag	3834
Ser Tyr Leu Gly Pro Asp Val	Asn Gln Ala Leu Val	Leu Glu Glu	
1265	1270	1275	
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Lys Leu Ala Thr Glu Ala Ala	Met Val Ser Glu Pro	Ser Cys Pro	
1280	1285	1290	
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Gln Tyr Pro Phe Pro Ala Asp	Ala Asn Thr Ser Asp	Tyr Val Asn	
1295	1300	1305	
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Tyr Gly Phe Asn Pro Glu Phe	Ile Pro Glu Ile Asn	Ala Ala Ser	
1310	1315	1320	
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Thr Phe Tyr Glu Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Gly Leu
 35 40 45

Thr Ser Leu Ser Asn Ile Ser Cys Leu Ser Asn Thr Pro Ala Arg His
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Val Thr Gly Asp His Leu Ala Leu Leu Gln Arg Val Cys Pro Arg Leu
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Tyr Asn Gly Pro Asn Asp Thr Tyr Ala Cys Cys Ser Thr Lys Gln Leu
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Val Ser Leu Asp Ser Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
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Cys Pro Ala Cys Ser Glu Asn Phe Val Ser Ile His Cys His Asn Thr
 115 120 125

Cys Ser Pro Asp Gln Ser Leu Phe Ile Asn Val Thr Arg Val Val Gln
 130 135 140

Arg Asp Pro Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
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Gln Arg Ser Phe Ala Glu Lys Ala Tyr Glu Ser Cys Ser Arg Val Arg
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Ile Pro Ala Ala Ala Ser Leu Ala Val Gly Ser Met Cys Gly Val Tyr
 180 185 190

Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
 195 200 205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
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Pro Gly Gln Ala Leu Ala Asp Gly Met Lys Pro Leu Asp Gly Lys Ile
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Thr Pro Cys Asn Glu Ser Gln Gly Glu Asp Ser Ala Ala Cys Ser Cys

245

250

255

Gln Asp Cys Ala Ala Ser Cys Pro Val Ile Pro Pro Pro Ala Leu
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Arg Pro Ser Phe Tyr Met Gly Arg Met Pro Gly Trp Leu Ala Leu Ile
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Ile Ile Phe Thr Ala Val Phe Val Leu Leu Ser Val Val Leu Val Tyr
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Leu Arg Val Ala Ser Asn Arg Asn Lys Asn Lys Thr Ala Gly Ser Gln
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Glu Ala Pro Asn Leu Pro Arg Lys Arg Arg Phe Ser Pro His Thr Val
325 330 335

Leu Gly Arg Phe Phe Glu Ser Trp Gly Thr Arg Val Ala Ser Trp Pro
340 345 350

Leu Thr Val Leu Ala Leu Ser Phe Ile Val Val Ile Ala Leu Ser Val
355 360 365

Gly Leu Thr Phe Ile Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
370 375 380

Ala Pro Lys Ser Gln Ala Arg Lys Glu Lys Ala Phe His Asp Glu His
385 390 395 400

Phe Gly Pro Phe Phe Arg Thr Asn Gln Ile Phe Val Thr Ala Lys Asn
405 410 415

Arg Ser Ser Tyr Lys Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe
420 425 430

Ser Gly Ile Leu Ser Leu Asp Leu Leu Gln Glu Leu Leu Glu Leu Gln
435 440 445

Glu Arg Leu Arg His Leu Gln Val Trp Ser His Glu Ala Gln Arg Asn
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Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro His Asn Thr
465 470 475 480

Ser Leu Thr Asp Cys Cys Val Asn Ser Leu Leu Gln Tyr Phe Gln Asn
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Asn His Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Asn Gly Gln
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Gly Thr Asp Tyr Ser Glu Ala Glu Ala Leu Ile Ile Thr Phe Ser Ile
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Ile Asn Arg Thr Thr Ile Gln Asp Leu Pro Val Phe Ala Ile Ser Tyr
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Leu Ile Val Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Arg
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Trp Ser Arg Val Ala Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
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Tyr Leu Gly Val Pro Ser Ser Leu Val Ile Ile Gln Val Val Pro Phe
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Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Ser Met Pro Ala
755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Ile Ile Phe Asp Phe
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Asn Leu Pro Pro Pro Lys Gln Lys Glu Gly Leu Leu Leu Cys Phe Phe
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835 840 845

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850 855 860

Cys Asn Ile Ser Val Gly Leu Asp Gln Asp Leu Ala Leu Pro Lys Asp
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Ser Tyr Leu Ile Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Leu Glu Val
885 890 895

Gly Pro Pro Val Tyr Phe Asp Thr Thr Ser Gly Tyr Asn Phe Ser Thr
900 905 910

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915 920 925

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930 935 940

Tyr Val Ala Ile Ala Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
945 950 955 960

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Ala Glu Ala Gly Leu Arg Gly Trp Leu Leu Trp Ala Leu Leu Leu Arg
5 10 15

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Leu Ala Gln Ser Glu Pro Tyr Thr Ile His Gln Pro Gly Tyr Cys
20 25 30

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Ala Phe Tyr Asp Glu Cys Gly Lys Asn Pro Glu Leu Ser Gly Ser Leu
35 40 45

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Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg Lys
50 55 60 65

atc aca ggt gat cac ctg atc cta tta cag aag atc tgc ccc cgc ctc 299
Ile Thr Gly Asp His Leu Ile Leu Leu Gln Lys Ile Cys Pro Arg Leu
70 75 80

tac acc ggc ccc aac acc caa gcc tgc tgc tcc gcc aag cag ctg gta 347
Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu Val
85 90 95

tca ctg gaa gcg agt ctg tcg atc acc aag gcc ctc ctc acc cgc tgc 395
Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg Cys
100 105 110

cca gcc tgc tct gac aat ttt gtg aac ctg cac tgc cac aac acg tgc 443
Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr Cys
115 120 125

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Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln Leu
130 135 140 145

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Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr Gln

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ggc acc agc ctc tct gac aag ctc agc ttc tcc acc cac acc ctc ctt Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu Leu 325	330	335	1067
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aat tac cct gcc ggg gac ccc cgt ctg gcc cag gcc aag ctg tgg gag Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp Glu 580 585 590	1835
gag gcc ttc tta gag gaa atg cga gcc ttc cag cgt cgg atg gct ggc Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala Gly 595 600 605	1883
atg ttc cag gtc acg ttc atg gct gag cgc tct ctg gaa gac gag atc Met Phe Gln Val Thr Phe Met Ala Glu Arg Ser Leu Glu Asp Glu Ile 610 615 620 625	1931
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gtc ata ttc ctg tac atc tct ctg gcc ctg ggc agc tat tcc agc tgg Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser Trp 645 650 655	2027
agc cga gtg atg gtg gac tcc aag gcc acg ctg ggc ctc ggc ggg gtg Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly Val 660 665 670	2075
gcc gtg gtc ctg gga gca gtc atg gct gcc atg ggc ttc ttc tcc tac Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser Tyr 675 680 685	2123
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cga gcc cta ggc agg gtg gct ccc agc atg ctg ttg tgc agc ctc tct Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu Ser 740 745 750	2315
gag gcc atc tgc ttc cta ggg gcc ctg acc ccc atg cca gct gtc Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala Val 755 760 765	2363
cgg acc ttt gcc ctg acc tct ggc ctt gca gtg atc ctt gac ttc ctc Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe Leu 770 775 780 785	2411
ctg cag atg tca gcc ttt gtg gcc ctg ctc tcc ctg gac agc aag agg Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys Arg 790 795 800	2459
cag gag gcc tcc cgg ttg gac gtc tgc tgc tgt gtc aag ccc cag gag Gln Glu Ala Ser Arg Leu Asp Val Cys Cys Cys Val Lys Pro Gln Glu 805 810 815	2507
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gcc	ccg	gtg	tac	ttt	gtt	acc	acc	ttg	ggc	tac	aac	ttc	tcc	agc	gag	2795
Ala	Pro	Val	Tyr	Phe	Val	Thr	Thr	Leu	Gly	Tyr	Asn	Phe	Ser	Ser	Glu	
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gct	ggg	atg	aat	gcc	atc	tgc	tcc	agt	gca	ggc	tgc	aac	aac	ttc	tcc	2843
Ala	Gly	Met	Asn	Ala	Ile	Cys	Ser	Ser	Ala	Gly	Cys	Asn	Asn	Phe	Ser	
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Phe	Thr	Gln	Lys	Ile	Gln	Tyr	Ala	Thr	Glu	Phe	Pro	Glu	Gln	Ser	Tyr	
930					935				940			945				
ctg	gcc	atc	cct	gcc	tcc	tcc	tgg	gtg	gat	gac	ttc	att	gac	tgg	ctg	2939
Leu	Ala	Ile	Pro	Ala	Ser	Ser	Trp	Val	Asp	Asp	Phe	Ile	Asp	Trp	Leu	
950					955							960				
acc	ccg	tcc	tcc	tgc	tgc	cgc	ctt	tat	ata	tct	ggc	ccc	aat	aag	gac	2987
Thr	Pro	Ser	Ser	Cys	Cys	Arg	Leu	Tyr	Ile	Ser	Gly	Pro	Asn	Lys	Asp	
965					970							975				
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Lys	Phe	Cys	Pro	Ser	Thr	Val	Asn	Ser	Leu	Asn	Cys	Leu	Lys	Asn	Cys	
980					985							990				
atg	agc	atc	acg	atg	ggc	tct	gtg	agg	ccc	tcg	gtg	gag	cag	ttc	cat	3083
Met	Ser	Ile	Thr	Met	Gly	Ser	Val	Arg	Pro	Ser	Val	Glu	Gln	Phe	His	
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Lys	Tyr	Leu	Pro	Trp	Phe	Leu	Asn	Asp	Arg	Pro	Asn	Ile	Lys	Cys		
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ccc	aaa	ggc	ggc	ctg	gca	gca	tac	agc	acc	tct	gtg	aac	tgg	act		3173
Pro	Lys	Gly	Gly	Leu	Ala	Ala	Tyr	Ser	Thr	Ser	Val	Asn	Leu	Thr		
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Leu	Asp	Ser	Ala	Ser	Arg	Phe	Met	Ala	Tyr	His	Lys	Pro	Leu	Lys		
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Asn	Ser	Gln	Asp	Tyr	Thr	Glu	Ala	Leu	Arg	Ala	Ala	Arg	Glu	Leu		
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gca	gcc	aac	atc	act	gct	gac	ctg	cg	aaa	gtg	cct	gga	aca	gac		3398
Ala	Ala	Asn	Ile	Thr	Ala	Asp	Leu	Arg	Lys	Val	Pro	Gly	Thr	Asp		
1100					1105							1110				
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Pro	Ala	Phe	Glu	Val	Phe	Pro	Tyr	Thr	Ile	Thr	Asn	Val	Phe	Tyr		

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Glu Gln Tyr Leu Thr Ile	Leu Pro Glu Gly Leu	Phe Met Leu Ser	
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ctc tgc ctt gtg ccc acc	ttc gct gtc tcc tgc	ctc ctg ctg ggc	3533
Leu Cys Leu Val Pro Thr	Phe Ala Val Ser Cys	Leu Leu Leu Gly	
1145	1150	1155	
ctg gac ctg cgc tcc ggc	ctc ctc aac ctg ctc	tcc att gtc atg	3578
Leu Asp Leu Arg Ser Gly	Leu Leu Asn Leu Leu	Ser Ile Val Met	
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Ile Leu Val Asp Thr Val	Gly Phe Met Ala Leu	Trp Gly Ile Ser	
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Tyr Asn Ala Val Ser Leu	Ile Asn Leu Val Ser	Ala Val Gly Met	
1190	1195	1200	
tct gtg gag ttt gtg tcc	cac att acc cgc tcc	ttt gcc atc agc	3713
Ser Val Glu Phe Val Ser	His Ile Thr Arg Ser	Phe Ala Ile Ser	
1205	1210	1215	
acc aag ccc acc tgg ctg	gag agg gcc aaa gag	gcc acc atc tct	3758
Thr Lys Pro Thr Trp Leu	Glu Arg Ala Lys Glu	Ala Thr Ile Ser	
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atg gga agt gcg gtg ttt	gca ggt gtg gcc atg	acc aac ctg cct	3803
Met Gly Ser Ala Val Phe	Ala Gly Val Ala Met	Thr Asn Leu Pro	
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ggc atc ctt gtc ctg ggc	ctc gcc aag gcc cag	ctc att cag atc	3848
Gly Ile Leu Val Leu Gly	Leu Ala Lys Ala Gln	Leu Ile Gln Ile	
1250	1255	1260	
ttc ttc ttc cgc ctc aac	ctc ctg atc act ctg	ctg ggc ctg ctg	3893
Phe Phe Phe Arg Leu Asn	Leu Leu Ile Thr Leu	Leu Gly Leu Leu	
1265	1270	1275	
cat ggc ttg gtc ttc ctg	ccc gtc atc ctc agc	tac gtg ggg cct	3938
His Gly Leu Val Phe Leu	Pro Val Ile Leu Ser	Tyr Val Gly Pro	
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gac gtt aac ccg gct ctg	gca ctg gag cag aag	cgg gct gag gag	3983
Asp Val Asn Pro Ala Leu	Ala Leu Glu Gln Lys	Arg Ala Glu Glu	
1295	1300	1305	
gcg gtg gca gca gtc atg	gtg gcc tct tgc cca	aat cac ccc tcc	4028
Ala Val Ala Ala Val Met	Val Ala Ser Cys Pro	Asn His Pro Ser	
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cga gtc tcc aca gct gac	aac atc tat gtc aac	cac agc ttt gaa	4073
Arg Val Ser Thr Ala Asp	Asn Ile Tyr Val Asn	His Ser Phe Glu	
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Gly Ser Ile Lys Gly Ala	Gly Ala Ile Ser Asn	Phe Leu Pro Asn	
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Asn	Gly	Arg	Gln	Phe																		
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ag	gg	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	4766
ca	tg	gg	at	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	4826
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gg	gg	ct	gg	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	tt	4946
g	ag	ct	tc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	5006
t	g	ct	gt	ca	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	cc	5066
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<211> 1359

<212> PRT

<213> Homo sapiens

<400> 44

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Cys	Ala	Phe	Tyr	Asp	Glu	Cys	Gly	Lys	Asn	Pro	Glu	Leu	Ser	Gly	Ser
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Leu Met Thr Leu Ser Asn Val Ser Cys Leu Ser Asn Thr Pro Ala Arg
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Lys Ile Thr Gly Asp His Leu Ile Leu Gln Lys Ile Cys Pro Arg
65 70 75 80

Leu Tyr Thr Gly Pro Asn Thr Gln Ala Cys Cys Ser Ala Lys Gln Leu
85 90 95

Val Ser Leu Glu Ala Ser Leu Ser Ile Thr Lys Ala Leu Leu Thr Arg
100 105 110

Cys Pro Ala Cys Ser Asp Asn Phe Val Asn Leu His Cys His Asn Thr
115 120 125

Cys Ser Pro Asn Gln Ser Leu Phe Ile Asn Val Thr Arg Val Ala Gln
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Leu Gly Ala Gly Gln Leu Pro Ala Val Val Ala Tyr Glu Ala Phe Tyr
145 150 155 160

Gln His Ser Phe Ala Glu Gln Ser Tyr Asp Ser Cys Ser Arg Val Arg
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Val Pro Ala Ala Ala Thr Leu Ala Val Gly Thr Met Cys Gly Val Tyr
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Gly Ser Ala Leu Cys Asn Ala Gln Arg Trp Leu Asn Phe Gln Gly Asp
195 200 205

Thr Gly Asn Gly Leu Ala Pro Leu Asp Ile Thr Phe His Leu Leu Glu
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Pro Gly Gln Ala Val Gly Ser Gly Ile Gln Pro Leu Asn Glu Gly Val
225 230 235 240

Ala Arg Cys Asn Glu Ser Gln Gly Asp Asp Val Ala Thr Cys Ser Cys
245 250 255

Gln Asp Cys Ala Ala Ser Cys Pro Ala Ile Ala Arg Pro Gln Ala Leu
260 265 270

Asp Ser Thr Phe Tyr Leu Gly Gln Met Pro Gly Ser Leu Val Leu Ile
275 280 285

Ile Ile Leu Cys Ser Val Phe Ala Val Val Thr Ile Leu Leu Val Gly
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Phe Arg Val Ala Pro Ala Arg Asp Lys Ser Lys Met Val Asp Pro Lys
305 310 315 320

Lys Gly Thr Ser Leu Ser Asp Lys Leu Ser Phe Ser Thr His Thr Leu
325 330 335

Leu Gly Gln Phe Phe Gln Gly Trp Gly Thr Trp Val Ala Ser Trp Pro
340 345 350

Leu Thr Ile Leu Val Leu Ser Val Ile Pro Val Val Ala Leu Ala Ala
355 360 365

Gly Leu Val Phe Thr Glu Leu Thr Thr Asp Pro Val Glu Leu Trp Ser
370 375 380

Ala Pro Asn Ser Gln Ala Arg Ser Glu Lys Ala Phe His Asp Gln His
385 390 395 400

Phe Gly Pro Phe Phe Arg Thr Asn Gln Val Ile Leu Thr Ala Pro Asn
405 410 415

Arg Ser Ser Tyr Arg Tyr Asp Ser Leu Leu Leu Gly Pro Lys Asn Phe
420 425 430

Ser Gly Ile Leu Asp Leu Asp Leu Leu Leu Glu Leu Leu Glu Leu Gln
435 440 445

Glu Arg Leu Arg His Leu Gln Val Trp Ser Pro Glu Ala Gln Arg Asn
450 455 460

Ile Ser Leu Gln Asp Ile Cys Tyr Ala Pro Leu Asn Pro Asp Asn Thr
465 470 475 480

Ser Leu Tyr Asp Cys Cys Ile Asn Ser Leu Leu Gln Tyr Phe Gln Asn
485 490 495

Asn Arg Thr Leu Leu Leu Leu Thr Ala Asn Gln Thr Leu Met Gly Gln
500 505 510

Thr Ser Gln Val Asp Trp Lys Asp His Phe Leu Tyr Cys Ala Asn Ala
515 520 525

Pro Leu Thr Phe Lys Asp Gly Thr Ala Leu Ala Leu Ser Cys Met Ala

530

535

540

Asp Tyr Gly Ala Pro Val Phe Pro Phe Leu Ala Ile Gly Gly Tyr Lys
545 550 555 560

Gly Lys Asp Tyr Ser Glu Ala Glu Ala Leu Ile Met Thr Phe Ser Leu
565 570 575

Asn Asn Tyr Pro Ala Gly Asp Pro Arg Leu Ala Gln Ala Lys Leu Trp
580 585 590

Glu Glu Ala Phe Leu Glu Glu Met Arg Ala Phe Gln Arg Arg Met Ala
595 600 605

Gly Met Phe Gln Val Thr Phe Met Ala Glu Arg Ser Leu Glu Asp Glu
610 615 620

Ile Asn Arg Thr Thr Ala Glu Asp Leu Pro Ile Phe Ala Thr Ser Tyr
625 630 635 640

Ile Val Ile Phe Leu Tyr Ile Ser Leu Ala Leu Gly Ser Tyr Ser Ser
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Trp Ser Arg Val Met Val Asp Ser Lys Ala Thr Leu Gly Leu Gly Gly
660 665 670

Val Ala Val Val Leu Gly Ala Val Met Ala Ala Met Gly Phe Phe Ser
675 680 685

Tyr Leu Gly Ile Arg Ser Ser Leu Val Ile Leu Gln Val Val Pro Phe
690 695 700

Leu Val Leu Ser Val Gly Ala Asp Asn Ile Phe Ile Phe Val Leu Glu
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Tyr Gln Arg Leu Pro Arg Arg Pro Gly Glu Pro Arg Glu Val His Ile
725 730 735

Gly Arg Ala Leu Gly Arg Val Ala Pro Ser Met Leu Leu Cys Ser Leu
740 745 750

Ser Glu Ala Ile Cys Phe Phe Leu Gly Ala Leu Thr Pro Met Pro Ala
755 760 765

Val Arg Thr Phe Ala Leu Thr Ser Gly Leu Ala Val Ile Leu Asp Phe
770 775 780

Leu Leu Gln Met Ser Ala Phe Val Ala Leu Leu Ser Leu Asp Ser Lys
785 790 795 800

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Glu Leu Pro Pro Gly Gln Gly Glu Gly Leu Leu Leu Gly Phe Phe
820 825 830

Gln Lys Ala Tyr Ala Pro Phe Leu Leu His Trp Ile Thr Arg Gly Val
835 840 845

Val Leu Leu Leu Phe Leu Ala Leu Phe Gly Val Ser Leu Tyr Ser Met
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Cys His Ile Ser Val Gly Leu Asp Gln Glu Leu Ala Leu Pro Lys Asp
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Ser Tyr Leu Leu Asp Tyr Phe Leu Phe Leu Asn Arg Tyr Phe Glu Val
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Gly Ala Pro Val Tyr Phe Val Thr Thr Leu Gly Tyr Asn Phe Ser Ser
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Ser Phe Thr Gln Lys Ile Gln Tyr Ala Thr Glu Phe Pro Glu Gln Ser
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Tyr Leu Ala Ile Pro Ala Ser Ser Trp Val Asp Asp Phe Ile Asp Trp
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Leu Thr Pro Ser Ser Cys Cys Arg Leu Tyr Ile Ser Gly Pro Asn Lys
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Asp Lys Phe Cys Pro Ser Thr Val Asn Ser Leu Asn Cys Leu Lys Asn
980 985 990

Cys Met Ser Ile Thr Met Gly Ser Val Arg Pro Ser Val Glu Gln Phe
995 1000 1005

His Lys Tyr Leu Pro Trp Phe Leu Asn Asp Arg Pro Asn Ile Lys
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Cys Pro Lys Gly Gly Leu Ala Ala Tyr Ser Thr Ser Val Asn Leu
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Arg Leu Glu Tyr Ser Gly Thr Ile Ser Ala His Cys Asn Leu Tyr
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Leu Leu Asp Ser Ala Ser Arg Phe Met Ala Tyr His Lys Pro Leu
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Lys Asn Ser Gln Asp Tyr Thr Glu Ala Leu Arg Ala Ala Arg Glu
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Met Ile Leu Val Asp Thr Val Gly Phe Met Ala Leu Trp Gly Ile
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Ser Tyr Asn Ala Val Ser Leu Ile Asn Leu Val Ser Ala Val Gly
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Ser Met Gly Ser Ala Val Phe Ala Gly Val Ala Met Thr Asn Leu
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Pro Gly Ile Leu Val Leu Gly Leu Ala Lys Ala Gln Leu Ile Gln
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Leu His Gly Leu Val Phe Leu Pro Val Ile Leu Ser Tyr Val Gly
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Pro Asp Val Asn Pro Ala Leu Ala Leu Glu Gln Lys Arg Ala Glu
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Asn Asn Gly Arg Gln Phe
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